

# Best Management Practices for the Application of Turf Pesticides and Fertilizers

## **Why Best Management Practices?**

Studies confirm that loss of pesticides to ground and surface waters continues to threaten water resources in the Northeast<sup>1</sup>. Applying pesticides to saturated lawns or when wet weather is predicted greatly increases the risk of loss. It is evident that lawn care companies and homeowners need to better understand the risks of applying fertilizers and pesticides under unfavorable conditions such as to saturated soils or just prior to heavy rain events. In 2005 despite these known risks, some lawn care companies in Maine were discovered making hundreds of applications during a week when it rained over 3 inches and was preceded by a 5 week period when more than 8.5 inches of rain was recorded.

Because of these inappropriate practices, the Maine Board of Pesticides Control (**BPC**) convened a committee to develop these Best Management Practices (BMPs). Heavy rains can easily wash away applications of fertilizers and pesticides from turf areas and move them into our precious and still somewhat pristine water resources. Surface water sampling done by The Friends of Casco Bay has detected multiple herbicides and at least one insecticide and fungicide in waters leaving Southern Maine residential developments<sup>2</sup>. Some of the concentrations found in these samples have exceeded aquatic life criteria and may be adversely impacting aquatic invertebrates and fish species. Industry professionals and the BPC agree these BMPs will improve the practices of commercial lawn care operations, golf course superintendents, athletic field managers, sod growers and home lawn enthusiasts.

Adding to this concern is the dramatic increase in distribution and use of lawn and garden pesticides in the State of Maine. BPC distribution and use reports show a sharp rise from 800,000 pounds in 1995 to 3,000,000 pounds in 2004.<sup>3</sup> Most of this material was a combination of fertilizers and pesticides (weed & feed products) applied to residential and commercial lawns. Another purpose for these BMPs is to demonstrate the BPC's desire for turf managers to minimize reliance on pesticides.

The Board recognizes that homeowners who apply pesticides under unfavorable conditions can also threaten water quality. But, our hope is the use of these BMPs by commercial lawn care operators, golf course superintendents, athletic field managers and sod growers will help reach the ultimate goal of reducing human and environmental risks and set the example for do-it-yourselfers.

## **Recommended BMPs**

### **❖ Site assessment**

#### **➤ Initial site visit**

- Determine customer expectations
- Assess weed, insect or disease problems to determine pest management needs
- Make a site plan showing turf areas and determine square footage to be treated

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<sup>1</sup> USGS Circular 1291 and Friends of Casco Bay surface water sampling results.

<sup>2</sup> Friends of Casco Bay surface water sampling results.

<sup>3</sup> Data derived from sales and distribution reports provided by pesticide manufacturers and distributors and commercial applicator summary reports provided to the Maine Board of Pesticides Control annually.

- Determine soil texture and structure, thatch depth, rooting depth, compaction and erosion
- Observe slope/gradient to determine where water runs off turf area
- Do a soil test on new sites to determine Phosphorus (P), Potassium (K), Calcium (Ca), Magnesium (Mg) levels, pH and Cation Exchange Capacity
- Note presence of sensitive areas on and off site, e.g., sandy/gravelly soils, shallow water table, drinking water wells, surface water storm drains, etc.
- Determine grass species mix
- Evaluate intensity of use
- Note turf sun exposure
- Keep records including the assessor's name and date of assessment

➤ **Turf assessment prior to treatment**

- Check soil conditions, e.g., compaction, erosion, frozen ground, depth to bedrock, saturated with water, etc.
- Identify incidence and severity of weed, insect or disease problems
- Determine current health of turf
- Determine watering frequency and intensity

➤ **Thorough periodic assessments**

- Annually
  - Re-assess the criteria under the initial site visit (see above)
  - Check customer expectations
  - Assure customer still wants the service
  - Review records of all management measures
- Every 3 to 5 years
  - Test soil pH and nutrient levels
  - Consider monitoring ground water for nitrates and pesticides at golf courses, sod farms or other intensively managed areas

❖ **Informed product choice**

➤ **Pesticides**

- Read labels and Material Safety Data Sheets thoroughly prior to making a choice
- Choose least toxic and least persistent products with the lowest exposure potential
- Choose products with the lowest pesticide leaching potential<sup>4</sup>
- Choose products with the lowest pesticide solution runoff potential<sup>4</sup>
- Choose products with the lowest pesticide adsorbed runoff potential<sup>4</sup>
- Choose products with the highest LC<sub>50</sub> level for aquatic life<sup>4</sup>
- Choose products with the highest Health Advisory Level (HAL) in drinking water<sup>4</sup>
- Choose products that are not highly toxic to bees or other pollinators
- Choose products that are selective and that affect the narrowest range of organisms
- Choose products that are separate from fertilizers and that can be used for spot treatments
- Choose products with low drift potential and low volatility

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<sup>4</sup> See attached Windows Pesticide Screening Tool chart

➤ **Fertilizers**

- Choose fertilizers with slow or timed-release nitrogen, e.g., WIN, resin coated urea, methylene ureas or composted organic materials
  - Do not apply slow or timed-release nitrogen at rates above 1 pound per 1000 square feet
- Avoid inorganic fertilizers, e.g., ammonium nitrate, calcium nitrate or ammonium sulfate
  - Do not apply quick release nitrogen at rates above ½ pound per 1000 square feet
- Use phosphorus free fertilizer, unless a soil test indicates a low phosphorus level or when establishing a new lawn from seed

❖ **Operating standards**

➤ **Prior to Application**

- Check for presence of people or pets
- Check for sensitive individuals nearby, e.g., daycare, nursing home, school, hospital, etc.
- Check for presence of non-target articles, e.g., toys, sandboxes, pet dishes, etc. and remove from treatment area or cover
- Check for open windows in areas adjacent to treatment and have them closed
- Check 24 hour weather forecast
- Record current weather conditions

➤ **Application**

- Base nutrient and pesticide applications on soil structure, conditions, pH and existing nutrient levels
- Never apply fertilizer or pesticides when there is standing water on any part of the area to be treated
- Never apply fertilizer or pesticides to saturated soils
- Never apply fertilizer or pesticides to frozen ground
- Never apply pesticides when surface temperatures exceed 85 degrees Fahrenheit
- Follow any other label requirements regarding maximum surface temperatures
- Never apply fertilizer or pesticides until the turf naturally greens up in the spring (approximately 50 – 55 degrees Fahrenheit at a 3 inch soil depth)
- Do not apply fertilizer or pesticides between December 1 and April 1
- Always consider weather forecasts for moderate to heavy rain and its effect on efficacy and potential environmental contamination
- Do not apply pesticides if rain or irrigation is imminent unless specified by the label
- Do not apply fertilizer or pesticides if moderate to heavy rain is imminent regardless of label statements
- Never apply fertilizers or pesticides to impervious surfaces, e.g., compacted paths, eroded areas, steep slopes, asphalt or other paving materials
- Never apply fertilizers or pesticides to bare ground unless it is to help establish new seed
- Cover seeded areas with straw or another appropriate mulch to prevent erosion
- Always clean up spills or misapplied product immediately
- Never leave misapplied products on driveways, roads, sidewalks or other hard surfaces
- To reduce nitrogen or phosphorus loss, assure that fertilizers are lightly watered in (¼ – ½ inch) following application
- When the label directs, assure that pesticides are watered in as directed
- Always fill fertilizer spreaders on a hard surface where any spills can be easily cleaned up

- Use a drop spreader instead of rotary type spreader near sensitive areas
- Leave a minimum 8 foot buffer zone of untreated grasses or other vegetation around water bodies, i.e., streams, rivers, lakes, estuaries, bays, coastal areas, vernal pools, wetlands or drainage areas, etc.
- Manage pest problems with spot applications, avoid broadcast applications

## ❖ **Customer/Neighbor Relations**

### ➤ **Notification**

- Remind the customer about their right to request copies of pesticide and fertilizer labels and material safety data sheets annually
- When requested, always provide copies of pesticide labels and material safety data sheets prior to application of pesticides or fertilizers
- When requested, always notify customers and/or neighbors at least 24 hours before any pesticide application
- After application, always inform customers about the treatment, e.g., fertilizer, insect control, weed control, disease control, etc.
- Assure that customers know when they must water in fertilizer or pesticide applications and how much water to apply
- Assure that customers and/or neighbors are aware of the re-entry period for any pesticide application

### ➤ **Customer education**

- The BPC believes that customer education is the foundation for informed decision-making regarding the application of pesticides and fertilizers to turf grass areas. It often is the key to customer satisfaction. Customers and mowing or irrigation contractors often control factors that are critical to the success of any turf management program. The need for, and/or efficacy of, applied materials is either enhanced or diminished by customer decisions and practices.

Customers must know when their expectations may be too high and when their cultural practices are affecting the health of their turf. Therefore, prior to using fertilizers and pesticides, practitioners must inform and educate their customers about proper lawn maintenance (see <http://www.yardscaping.org/lawn/index.htm>) and the following topics:

- Soil depth and texture
- Soil pH and nutrient imbalances
- Grass species selection in relation to soil and shade conditions and intensity of use
- Grass species selection in relation to fertilizer need and pest resistance
- Proper mowing height and frequency, mower maintenance and clipping management
- Proper watering techniques
- Soil compaction or thatch development problems
- Need for buffers around wells and water bodies
- Options for use of low risk controls, e.g., natural, biological, mechanical or physical controls
- Options for use of composts or other slow release fertilizers
- Options for use of phosphorus free fertilizers